

DETAILED ACTION

While any delay in prosecution is regrettable. A new grounds of rejection has been made below.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,2,6,7,11,12,16,17,18,19,20,21 and 23 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US 5513489 to Bussing (called 489).

a. Re claims 1,2,6,7,11,12,16,17,18,19 and 20, 489 discloses a detonation chamber and other parts of a PDE made from low thermal stability material such as plastic as seen at least in column 5 at lines 45-50. Also for multiple engines see the figures.

b. Re claims 21 and 23, 489 also discloses that the detonation of the second and then the first engines goes cyclically as seen in at least column 10 at lines 37-45.

3. Claims 1,4,5,6,7,9,10,11,14, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2003/0200753 to Eidelman et al. (called 753).

c. 753 discloses at least in paragraph 30 that the low thermal stability material is carbon-carbon and/or titanium alloys.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3,8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5513489 as seen above.

d. 489 discloses the use of plastic in parts of a PDE and therefore it would have been obvious to one of ordinary skill in the art to have chosen the plastic to be of polytetrafluoroethylene or polyimide as these are extremely common plastics that are used in many types of industry. This would be done for the reason of using a material that would predictably lower costs of manufacture.

6. Claims 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5513489 as seen above.

e. Re claim 22, as seen in 489 there is a mode of operation that is cyclical however it would have been obvious to one of ordinary skill in the art to have operated the PDE substantially coinciding with the first for the predictable results of allowing the PDE's to operate with more thrust at one time for producing more powerful movements of the device that is attached to the PDE's.

f. Re claim 24, as seen in 489 PDE's may be used in propulsion. Therefore it would have been obvious to one of ordinary skill in the art to have used the PDE's in RCS for the predictable results of propelling a spacecraft in orbital control maneuvers. This would be done for stability and orbital maintenance of a satellite or other spacecraft.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art discloses light metals in engines.

g. US 4767314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy D. Collins whose telephone number is 571-272-6886. The examiner can normally be reached on M-F, 7:00-3:00, with every other Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter M. Poon can be reached on 571-272-6891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Timothy D. Collins/
Primary Examiner
Art Unit 3643